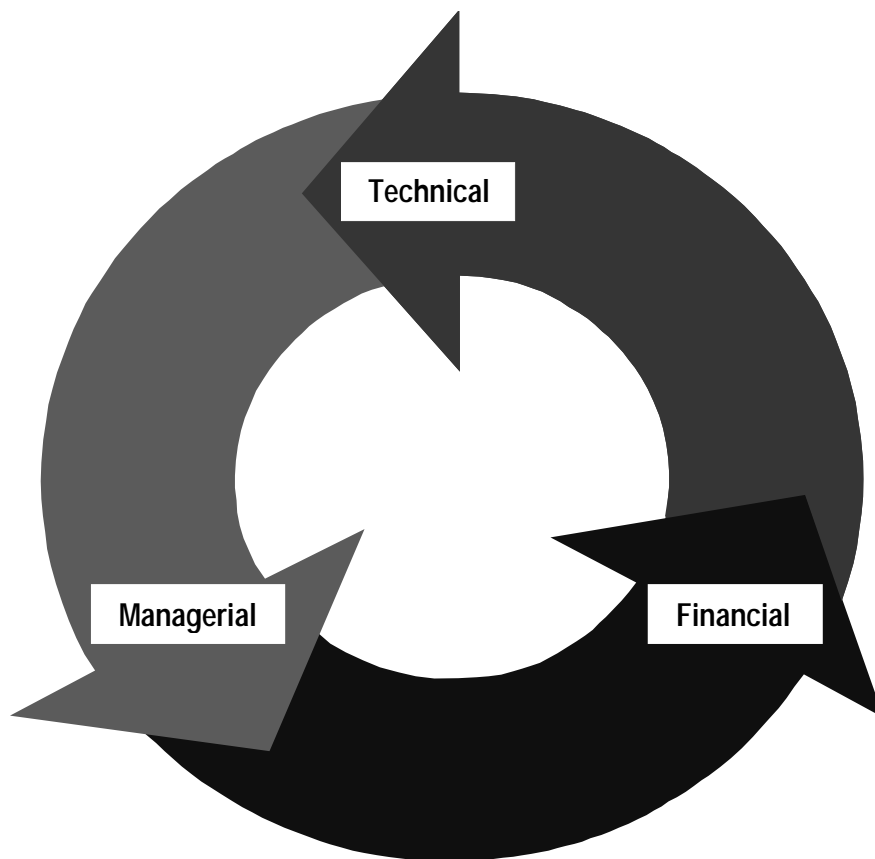


"CAPACITY DEVELOPMENT"

A Self-Assessment Manual For Indiana's Public Water Systems



January 2001



Introduction

A water system should be “operated like a business.” This is a frequently repeated phrase. But, what is meant by it? Here’s one useful way to think about what it means to operate as a business:

For a successful business, a manager must be aware of changes taking place in the environment in which the business operates. It is necessary to constantly look to the future to:

- 1) Cope with any **threats** to the survival of the business; and*
- 2) Take advantage of **opportunities** to improve the performance of the business.*

In the same way, owners and managers of a water system must look to the future. Such things as the need for financing, the impact of new regulations, or the loss of key customers will present management demands that can only be met through sound business planning.

Many water systems were started at a time when the costs of providing water was low and regulatory demands were few. Without significant costs or other pressures, there was little incentive to focus on the business aspects of the operation. But times have changed! Little remains of the good old days when operating a water utility was a simple job. Today, customer expectations and new regulations have significantly increased the level of responsibility and preparedness required of public water systems. This manual provides a process for water systems to assess their capacity to function in an effective, “business-like” manner.

Section 1420(c)(1)(C) of the Safe Drinking Water Act requires States to develop and implement a strategy to assist existing public water systems in acquiring and maintaining technical, managerial, and financial capacity. What exactly does technical, managerial, and financial capacity mean?

- **Technical capacity** - the physical infrastructure of the water system, including but not limited to the source water adequacy, infrastructure adequacy, and technical knowledge. In other words, does your treatment system work the way it is supposed to? Are you providing the safest and cleanest water possible required by law to your customers right now? Will you be able to in the future?
- **Managerial capacity** - the management structure of the water system, including but not limited to ownership accountability, staffing and organization, and effective linkages. In simpler terms, do you have capable and trained staff? Does your system have an effective management structure?
- **Financial capacity** - the financial resources of the water system, including but not limited to the revenue sufficiency, credit worthiness, and fiscal controls. Basically, does your system have a budget and enough revenue to cover costs, repairs, and replacements?

This self-assessment manual presents a structured series of yes/no questions which follow the three major elements of Capacity Development: Technical Capacity, Managerial Capacity, and Financial Capacity. The questions are intended to help you identify major capital and operating costs that could arise in the future operation of your system.

Within each section of the manual, the questions are grouped according to overall topic areas. Each topic represents an important area where there may be hidden costs in your future. The individual yes/no questions under each topic are intended to stimulate your thinking about the topic in general. In going through them you should keep the general topic in mind and ask yourself: “Is there anything to worry about here?” “Is there anything that could surprise us and cost a lot of money?”

There are questions covering every major category of capital and operating costs. **The questions are all structured such that a “yes” answer means that cost surprises are unlikely and a “no” answer means some potential for cost surprises exist.**

When answering the questions, be honest with yourself. If you don’t know the answer, take the time to do the research. In order to answer some of the questions, you may need to look at some records or find someone to help you understand the topic. When you come upon such questions, leave them blank and get what you need to complete them later.

Some questions may not apply to your system. For example, surface water questions do not apply to ground water systems. When you encounter such questions, simply cross them out and mark “NA” in the margin next to them, so you will remember to ignore those sections.

How do you use the results of this self-assessment to tell if your water system is going to be a successful business in the future?

There is no standard scoring system that can be used to interpret your answers to the yes/no questions. If you have relatively few “no” answers, the potential for cost surprises in your future is probably less than if you have several “no” answers. However, it is important for you to think carefully about each “no.” Consider what can be done to reduce your liability in each instance and make an estimate about what each “no” might cost you. Ask yourself “What do all the “no” answers add up to?” “What must be done to change a “no” answer to a “yes?” “Can my system afford it?”

System Name:	
Public Water Supply ID #:	
Prepared By:	
Phone #:	
Date:	

Drinking Water Definitions

Community water system: A public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

Contaminant: Any microorganisms, chemicals, waste, physical substance, radiological substance, or any wastewater introduced or found in the drinking water.

Disinfectant: Any oxidant, including but not limited to, chlorine, chlorine dioxide, chloramine, and ozone, that is added to water in any part of the treatment or distribution process and that is intended to kill or inactivate pathogenic microorganisms.

Disinfectant contact time: The time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration is measured.

Filtration: A process for removing particulate matter from the water by passing the water through porous media.

Ground Water: The supply of fresh water found beneath the surface of the ground, usually in aquifers, which is often used for supplying wells and springs.

Ground Water Under the Direct Influence (GWUDI) of Surface Water: Any water beneath the surface of the ground with a significant occurrence of insects, macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*; or any water with significant and relatively rapid shifts in water quality characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Maximum Contaminant Level (MCLs): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.

mg/L: Milligrams per liter - equivalent to parts per million.

µg/L: Micrograms per liter - equivalent to parts per billion.

Nontransient Noncommunity water system: A public water system that is not a community system which regularly serves the same twenty-five (25) or more persons at least six (6) months per year

NTU: Nephelometric turbidity unit.

Operator: The person in direct or responsible charge and supervising the operation of a water treatment plant or a water distribution system.

pCi/L: picoCuries per liter – The quantity of radioactive material producing two and twenty-two hundredths (2.22) nuclear transformations per minute.

psi: Pounds per square inch.

Surface Water: All water occurring on the surface of the ground, including water in a stream, natural and artificial lakes, ponds, swales, marshes, and diffused surface water.

Turbidity: A cloudy condition in water due to suspended silt or organic matter.

Waiver: A process used by the Department of Environmental Management that allows a public water system to reduce or eliminate monitoring for a particular contaminant.

Technical Capacity

Please mark ☒ the appropriate box: *Yes*, *No*, or *Unknown* for each section. Please try to determine the answer to every question. If a section or question does not apply to your system, please write NA for not applicable.

Your Water Supply

Water Supply and Existing Demands	Yes	No	Unknown
Do you know how much water you pump on an average day? <i>Amount:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know how much water you pump on a peak day? <i>Amount:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the maximum amount of water you can pump from your source? <i>Amount:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your source capacity higher than your peak day demand? <i>Percentage higher or lower:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can you meet peak demand without pumping at peak capacity for extended periods? <i>Longest time pumping at peak demand:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you been able to provide adequate volumes of water during drought conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have an Emergency Response Plan that will allow your system to meet system demand during a drought, shortage, or natural disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Demand	Yes	No	Unknown
Do you know whether your system demand will be growing, declining, or remain stable over the next ten years? <i>Please circle one: growing declining stable</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you have large commercial, industrial, or irrigation users, do you know their long-term plans and understand their needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Uses of Water	Yes	No	Unknown
Are you knowledgeable about other demands being placed on the same water source that you are using?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know who the other users are and do you understand their future plans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you registered as a significant water withdraw facility with the Indiana Department of Natural Resources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Quality	Yes	No	Unknown
In the past year, have you remained in compliance with the maximum contaminant level for the bacteriological contaminants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past two years, have you remained in compliance with the Nitrate maximum contaminant level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past three years, have you remained in compliance with Inorganic Chemical (IOC) maximum contaminant levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past three years, have you remained in compliance with Synthetic Organic Compound (SOC) maximum contaminant levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Water Quality (continued)	Yes	No	Unknown
In the past three years, have you remained in compliance with Volatile Organic Compound (VOC) maximum contaminant levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the levels of Arsenic in your finished water at or below 0.010 mg/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever monitored for Radon in your wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the level of Radon in your wells below 4,000 pCi/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the level of Radon in your wells below 300 pCi/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the level of Sulfate in your wells below 250 mg/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you monitored for Methyl Tertiary-Butyl Ether (MtBE) in your wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treatment – General	Yes	No	Unknown
Does your treatment system(s) adequately treat the water to comply with the applicable primary or secondary drinking water standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your treatment system properly operated and maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchased Water	Yes	No	Unknown
If you purchase water from another system or a wholesaler, do you know their long-term plans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a contract to purchase water? <i>If yes, with who?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you currently complying with your contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the terms affecting your supply during drought conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative Sources	Yes	No	Unknown
Are alternative water sources possibly available to you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you knowledgeable of the characteristics and costs of using alternative water sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Source	Yes	No	Unknown
Do you know the depth of your wells? <i>Depths:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the “type” of aquifer system from which your water is drawn? <i>If yes please circle one:</i> <i>confined</i> <i>unconfined</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Source Water Protection	Yes	No	Unknown
Do you meter your water at each well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know if you qualify for the fixed radius delineation method?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have an approved “phase I” Wellhead Protection Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you on track with your Wellhead Protection Plan implementation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know all the types of land uses within your wellhead protection area or your source water area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the areas within your wellhead protection area or source water area that are served by septic systems, wastewater treatment facilities or have an agricultural feedlot waste treatment facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment - Microbiological Contamination

Is your system using surface water or ground water under the direct influence of surface water?	<input type="checkbox"/> yes <input type="checkbox"/> no	(if you checked “no”, skip to the next section - Ground Water Systems)
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Surface Water Systems

Filtration Plant Condition	Yes	No	Unknown
Is your filter plant in good physical condition (free from spalling concrete, peeling paint)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are repair parts available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have redundancy (back-ups/automatic switchovers) for all major mechanical units? <i>If no, list units you do NOT have redundancy for:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can your plant achieve a filtered water turbidity of 0.3 NTU?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have on-line continuous turbidimeters on each filter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you adopted a turbidity goal lower than the standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have the capability to add coagulant before the filter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a procedure in place to determine your filter backwash frequency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you recycle your filter backwash water, do you return the recycled water to a location at or before the point of coagulant addition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has IDEM performed a "sanitary survey" of your system recently with satisfactory results? <i>Year of last sanitary survey:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ground Water Systems

Ground Water Under the Direct Influence (GWUDI) of Surface Water	Yes	No	Unknown
Are your wells more than 50 feet deep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your water free from variations in turbidity and temperature after storm events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has a determination been completed by the IDEM to evaluate whether your wells are classified as "ground water under the direct influence" (GWUDI) of surface water? <i>Please circle one: Wells GWUDI? yes no</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well Construction and Protection	Yes	No	Unknown
Do you know when your wells were constructed? <i>List year(s):</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did IDEM approve your well sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are your wells constructed according to current Indiana regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are your wells protected from flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has IDEM performed a "sanitary survey" of your system recently with satisfactory results? <i>Year of last sanitary survey:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Disinfection

Do you disinfect?	<input type="checkbox"/> yes <input type="checkbox"/> no	(if you checked "no", skip to the Infrastructure - Pumping section)
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Disinfection	Yes	No	Unknown
Do you regularly inspect and maintain your disinfection/chlorination equipment? <i>Type of equipment:</i> _____ <i>How often?</i> _____ <i>Disinfectant used:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have back-up equipment? <i>Type:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have adequate contact time following disinfection and before the first user in the distribution system? <i>Approximate Contact time:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you test for chlorine (free and total) daily in the distribution system and at plant taps? <i>Average free chlorine residual in distribution system:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Disinfection By-Products

Treatment for the Control of Disinfection By-Products	Yes	No	Unknown
Is the level of total trihalomethanes (TTHMs) in your distribution system below 80 µg/L.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you treat surface water, are you already practicing or could you adopt “enhanced coagulation” in your current plant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you treat surface water, do you know how much disinfection contact time your plant is achieving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Infrastructure - Pumping

Condition of Pumping Equipment	Yes	No	Unknown
Do you routinely inspect for signs of pump or pump motor problems? <i>How often?</i> _____ <i>How are the pumps monitored?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Once diagnosed, are problems corrected in a timely enough manner to avoid crisis financing, costly repairs, and unscheduled downtime?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you hire a qualified pump contractor to perform an inspection of all pumping equipment, identify potential problems, and perform maintenance, on an annual basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standby/Emergency Power Equipment	Yes	No	Unknown
Is there sufficient standby/emergency power capacity to supply 100% of the average daily demand (excluding fire demand)? <i>How long?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any existing standby/emergency power equipment, controls and switches tested or exercised routinely under load conditions, for at least 30 minutes at a time? <i>How often?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the local electric utility been made aware of the standby/emergency power provisions made by the water system, so that they can reinforce and safeguard the electrical facilities serving the water operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Infrastructure - Storage

Storage Capacity	Yes	No	Unknown
Does the system have sufficient gravity-flow (non-pumped) or emergency generator-supported pumping capability to ensure adequate distribution storage to provide safe and adequate service for up to 24 hours without power? <i>If no, how long?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there reserve capacity in the tank for fire protection support? <i>Amount:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security Measures	Yes	No	Unknown
Are any openings such as vent pipes, screened to protect against the entrance of birds, small animals, mosquitoes, flies and other small insects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there an entry hatch to allow access for cleaning and painting of the interior of the tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your storage tank covered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the tank and the immediate surrounding area fenced and secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control Systems	Yes	No	Unknown
Is there a high and low water level signal system to control the pumps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there an altitude valve, to preclude the tank from overflowing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a drain valve or hydrant to allow for draining of the tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there an alarm system to notify the operator of problems in the system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tank Maintenance	Yes	No	Unknown
Is the tank inspected at least every three years by a qualified tank contractor for evidence of corrosion or pitting, leakage, structural weakness, integrity of safety devices, and accuracy of pressure gauges?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the tank contractor capable of analyzing the coating of paint on the interior and exterior surfaces of the tank to determine if it contains lead or other hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Infrastructure - Distribution

System Maintenance	Yes	No	Unknown
Does the operator routinely flush, test, and maintain the hydrants in the system? <i>How often:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the locations of valves in the mains and curb stops on the service lines precisely known?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the system keep a log of distribution system breaks to identify weak areas in the system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are histories, locations, size, and type of mains and service lines detailed on records in a secure area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all valves exercised and lubricated periodically? <i>How often:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the system free of severe "water hammer" problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

System Maintenance (continued)	Yes	No	Unknown
Are meter pits, pressure regulating valves, altitude valves, blow-offs, and other appurtenances maintained on a regular basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unaccounted-for Water	Yes	No	Unknown
Is unaccounted-for water in the water system monitored and analyzed each month?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the unaccounted-for water less than 15 percent of the total water delivered to the mains? <i>List percentage of unaccounted-for water:</i> _____ %	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the normal operating pressures in the distribution system between 35 psi and 80 psi? <i>Normal operating pressure:</i> _____ psi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a routine leak detection and repair program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all sources of supply and customers metered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the meters calibrated and tested routinely to ensure their accuracy and reliability? <i>How often:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Quality in Distribution System	Yes	No	Unknown
Is an annual inspection for cross-connections performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a program for installing and testing backflow prevention devices where potential contamination is present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a program to eliminate "dead-ends" in the mains, where feasible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction Standards	Yes	No	Unknown
Are there a low percentage of mains less than 6 inches in diameter in the water system? <i>List percentage:</i> _____ %	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a program to gradually replace sub-standard sized mains?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are their suitable rights-of-way and easements provided to the water system for expansion, maintenance, and replacement of mains and services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there sufficient earth cover to protect the mains from frost damage or heavy loads, if driven over? <i>Inches of cover:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are materials of mains designed and selected to resist corrosion, electrolysis, and deterioration?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distribution System Problems	Yes	No	Unknown
Do you receive <u>few</u> complaints regarding taste, odor, or staining? <i>List number of complaints in the past year:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can you maintain adequate pressure in the distribution system under all conditions of flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Managerial Capacity

Please mark ☒ the appropriate box: *Yes*, *No*, or *Unknown* for each section. Please try to determine the answer to every question. If a section or question does not apply to your system, please write NA for not applicable.

Operation & Maintenance

Operations Staff	Yes	No	Unknown
Does the person operating your system hold a current certified drinking water operator's license from IDEM? <i>If yes, list classification(s):</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your operator receive additional training on an ongoing basis to keep current on new developments in the field?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Future Operational Demands	Yes	No	Unknown
Does your water system obtain any regular or occasional technical assistance from outside sources such as IDEM, your engineer, other utilities, or organizations specifically dedicated to providing technical assistance? <i>If yes, who:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Management & Administration

Who's in Charge?	Yes	No	Unknown
Is there a clear plan of organization and control among the people responsible for management and operation of the system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the limits of the operator's authority clearly known?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all the specific functional areas of operations and management assigned?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does everyone involved in operations know who is responsible for each area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is someone responsible for scheduling work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rules and Standards	Yes	No	Unknown
Do you have explicit rules and standards for system modifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have rules governing new hook-ups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a water main extension policy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have standard construction specifications to be followed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have measures to assure cross-connection control and backflow prevention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have policies or rules describing customer rights and responsibilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regulatory Compliance Program	Yes	No	Unknown
Do you fully understand all of your monitoring requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a scheduling mechanism to assure compliance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a mechanism to obtain the most recent information on regulatory requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know how to get clarifications or explanations of the requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Regulatory Compliance Program (continued)	Yes	No	Unknown
Do you maintain adequate records to document compliance? <i>If yes, for how long?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you fill out Monthly Reports of Operations (MROs) completely and submit them to IDEM?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your track record free of repeated episodes of monitoring violations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know what to do in the event of a failure to monitor violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you know what to do in the event of an MCL violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you currently in compliance with all drinking water regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you delivering adequate and timely annual consumer confidence reports (CCRs) to your consumers?			
Are you aware of and do you understand provisions for obtaining waivers from monitoring requirements or the role of vulnerability assessments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you currently in compliance with all wastewater regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergencies	Yes	No	Unknown
Do you have an Emergency Response Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a contingency for making emergency interconnections to neighboring systems, and do you know they will work if needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does everyone involved in operations know what they are to do in the event of contamination from a toxic hazardous waste spill in your source water or a main break or a tank failure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a clear chain-of-command protocol for emergency action?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is someone responsible for emergency operations, for communications with state regulators, for customer relations, for media relations? <i>If yes, who (title):</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	Yes	No	Unknown
Do you have a safety program defining measures to be taken if someone is injured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does everyone understand the risks and safety measures involved in handling water treatment chemicals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have written operating procedures for both routine and emergency system operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you fully aware of Occupational Safety and Health Administration (OSHA) confined space (such as trenches/manholes) regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance	Yes	No	Unknown
Do you have a planned maintenance management system -- a system for scheduling routine preventive maintenance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a system for assuring adequate inventory of essential spare parts and back-up equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have relationships with contractors and equipment vendors to assure prompt priority service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have records and data management systems for system operating and maintenance data, for regulatory compliance data, and for system management and administration?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management Capability	Yes	No	Unknown
Are you aware of upcoming regulations in the water industry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you getting the outside services and technical assistance you need, such as adequate legal counsel, insurance, engineering advice, technical/operations assistance, rate case preparation, and financial advice?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Financial Capacity

Please mark ☒ the appropriate box: *Yes*, *No*, or *Unknown* for each section. Please try to determine the answer to every question. If a section or question does not apply to your system, please write NA for not applicable.

Financial Planning Mechanisms	Yes	No	Unknown
Do you know your actual cost of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have an annual budget?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have within the annual budget a separate reserve account for equipment replacement and/or capital improvement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a capital budget or capital improvement plan that projects future capital investment need some distance (at least five years) into the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a process for scheduling and committing to capital projects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a capital improvement plan that covers at least the next ten years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your planning process take account of all the potential capital needs suggested by your answers to the technical questions in these worksheets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your long-term planning incorporate analysis of alternative strategies that might offer cost savings to customers, such as consolidation with other nearby systems or sharing of operations and management expenses with other nearby systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rates/Billing - Are they Adequate?	Yes	No	Unknown
Do you regularly review your rates? <i>How often?</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a plan in place for periodic increases in rates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the rate structure based on metered watered use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
List water rates per 1000 gallons: _____			
Do users pay the same or higher rate per 1000 gallons as they use more water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the rate structure assure proportionality among users?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have procedures for billing and collection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your billing collection rate greater than 95%?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have collection procedures specifically for delinquent accounts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial Planning Mechanisms - Are they Adequate?	Yes	No	Unknown
Do you have audited financial statements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your water system presently operate on a break-even basis or better?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the water system keep all the water revenues (i.e., water revenue does not support other municipal departments or unrelated activities)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you employ standardized accounting and tracking systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you track budget performance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you keep records to substantiate depreciation of fixed assets and accounting for reserve funds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are financial management recordkeeping systems organized?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are controls exercised over expenditures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are controls exercised to keep from exceeding your budget?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there purchasing procedures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Financial Spreadsheet

Please complete the financial spreadsheet on the following page (Section 5 Page 3) using the guidance presented on the reverse side of the form (Section 5 Page 4).

GUIDELINES:

This cash flow projection form provides a systematic method of estimating cash receipts, disbursements and balances. The entries listed on the form will not necessarily apply to every PWS, and some entries may not be included which would be pertinent to each PWS. It is suggested, therefore, that the form be adapted to each particular PWS, with appropriate changes in the entries as may be required.

Procedure: Most of the entries on the form are self-explanatory; however, the following suggestions are offered to simplify the procedure:

- (1) First gather the audited financial statements, internally prepared statements or budgets and other information for the current and prior years.
- (2) Complete the column for last year using actual data from your audited financial statements, if available, or your internally prepared financial statements. Keeping in mind that, for purposes of this analysis, it is important to use cash receipts and disbursements. *Suggestion: Round the amounts at least to the nearest dollar.*
- (3) Complete the current year's column using the most recent budget information. Include all expenditures incurred by the utility.
- (4) Complete the form using the suggestions in the partial form below for each entry. Be sure to include any expenditure resulting from planned plant improvement and estimate the impact of inflation on all expenditures.
- (5) Item #1 (Beginning Cash on Hand) plus item #3 (Total Cash Receipts) minus Item #6 (Total Cash Paid Out) should equal Item #7 (Ending Cash Position).
- (6) Item #13 (Total Reserves) plus Item #12 (Operating Cash) should equal Item #7 (Ending Cash Position).
- (7) Item #1 (Beginning Cash on Hand) should equal Item #7 (Ending Cash Position) from the prior financial period.
- (8) Items #8 & #9 are used together to determine the impact of the rate structure on the equivalent residential user. If industrial or business customers contribute a significant portion of the revenues, these amounts should be looked at separately. Consideration should be given to design a rate structure so that each category of user pays its proportional share of the costs of operating and maintaining the PWS.
- (9) Item #10 is used to determine to what extent a PWS's net operating income is able to cover its debt service requirements.
- (10) Item #11 is used to determine to what extent a PWS's rate structure produces revenues sufficient to cover operating expenses.
- (11) Item #12 is the operating cash balance at year-end. The operating cash balance at the end of any financial period should be adequate to meet the cash requirements for a minimum of one month. If there is too little cash, additional cash may have to be injected or expenditures may have to be reduced. If there is excessive cash on hand, the money should be invested or otherwise deposited into interest bearing accounts (e.g., set up reserves for replacement or capital improvements, etc.)

Financial Spreadsheet

System Name: _____
 PWSID#: _____
 Completed by: _____
 Date: _____

4 Year Projections	Last Year Actual	Current Year Budget Year 1 Projected	Year 2 Projected	Year 3 Projected	Year 4 Projected
Enter Year:					
1. Beginning Cash on Hand					
2. Cash Receipts:					
a. Unmetered Water Revenue					
b. Metered Water Revenue					
c. Other Water Revenue					
d. Total Water Revenues (2a thru 2c)					
e. Connection Fees					
f. Interest and Dividend Income					
g. Other Income					
h. Total Cash Revenues (2d thru 2g)					
i. Transfers in/Additional Rev Needed					
j. Loans, Grants or other Cash Injection please specify					
3. Total Cash Receipts (2h thru 2j)					
4. Total Cash Available (1+3)					
5. Operating Expenses					
a. Salaries and wages					
b. Employee Pensions and Benefits					
c. Purchased Water					
d. Purchased Power					
e. Fuel for Power Production					
f. Chemicals					
g. Materials and Supplies					
h. Contractual Services – Engineering					
i. Contractual Services – Other					
j. Rental of Equipment/Real Property					
k. Transportation Expenses					
l. Laboratory					
m. Insurance					
n. Regulatory Commission Expenses					
o. Advertising					
p. Miscellaneous					
q. Total Cash O&M Expenses (5a thru 5p)					
r. Replacement Expenditures					
s. Total OM&R Expenditures (5q+5r)					
t. Loan Principal/Capital Lease Payments					
u. Loan Interest Payments					
v. Transfers Out					
w. Capital Purchases (specify):					
x. Other					
6. Total Cash Paid Out (5s thru 5x)					
7. Ending Cash Position (4 - 6)					
8. Number of Customer Accounts					
9. Average Annual User Charge per Account (2d/8)					
10. Coverage Ratio (2h-5s)/(5t+5u)					
11. Operating Ratio (2d/5s)					
12. End of Year Operating Cash (7 - 13)					
13. End of Year Reserves:					
a. Debt Service Reserve					
b. Bond Retirement Reserve					
c. Capital Improvement Reserve					
d. Replacement Reserve					
Total Reserves (13a thru 13e)					

Instructions

4 Year Projections	Last Year Actual	Current Year Budget	Year 2 Projected	Year 3 Projected	Year 4 Projected
1. Beginning Cash on Hand	For the prior period and the current year budget, use the actual cash balance. For all other years, cash on hand should equal item #12 from previous period.				
2. Cash Receipts:					
a. Unmetered Water Revenue	All cash received/estimated for water supplied to residential, commercial, industrial and public customers where the customer charge is not based on quantity, i.e., its based on diameter of service pipe, room, foot of frontage or other type units.				
b. Metered Water Revenue	All cash received/estimated for water supplied to residential, commercial, industrial and public customers where the charge is based on quantity of water delivered.				
c. Other Water Revenue	Other cash received/estimated from sale of water, e.g., sales for irrigation, sales for resale, inter- municipal sales, advalorem taxes (OM&R portion) etc.				
d. Total Water Revenues (2a thru 2c)	Self-explanatory				
e. Connection Fees	All cash received/estimated for connection of customer service during the year.				
f. Interest and Dividend Income	All cash received/estimated on interest income from securities, loans, notes, etc., whether the securities are carried as investments or included in sinking or reserve accounts.				
g. Other Income	Other revenues collected/estimated during the period (e.g., disconnection or change in service fees, Profit on materials billed to customers, servicing of customer lines, late payment fees, rents, sales Of assets, advalorem taxes (infrastructure portion) etc.).				
h. Total Cash Revenues (2d thru 2g)	Self-explanatory				
i. Transfers in/Additional Rev Needed	Includes transfers from other funds with the municipality or can be used as a "plug" figure when determining the additional cash needed to cover cash needs.				
j. Loans, Grants or other Cash Injection	Includes loans or grants from financial institutions, inter-municipal loans, state or federal sources.				
3. Total Cash Receipts (2h thru 2j)	Self-explanatory				
4. Total Cash Available (1+3)	Self-explanatory				
5. Operating Expenses	Use actual amounts paid when completing the prior year. Estimate the amounts for projected years based on prior year amounts, trends and other known variables (including those related to needs identified in the self-assessment.				
a. Salaries and wages	Cash expenditures made/estimated for salaries, bonuses and other consideration for work related to the O&M of the facility, including administration, and compensation for officers, directors, etc.				
b. Employee Pensions and Benefits	Paid vacations, paid sick leave, health insurance, unemployment insurance, pension plan, etc.				
c. Purchased Water	Amounts paid/estimated for cost of water purchased for resale.				
d. Purchased Power	Amounts paid/estimated for all electrical power for the utility.				
e. Fuel for Power Production	Amounts paid/estimated for fuel purchased for the production of power to operate pumps, etc.				
f. Chemicals	Amounts paid/estimated for chemicals used in the treatment and distribution.				
g. Materials and Supplies	Amounts paid/estimated for materials and supplies used for O&M of the PWS other than those under contractual services.				
h. Contractual Services – Engineering	Amounts paid/estimated to outside engineers to perform ongoing engineering work for the facility.				
i. Contractual Services – Other	Amounts paid/estimated for costs of outside accounting, legal, managerial, and other services.				
j. Rental of Equipment/Real Property	Amounts paid/estimated for costs associated w/the rental of equipment, buildings and real property.				
k. Transportation Expenses	Amounts paid/estimated for automobile, truck, equipment, and other vehicle use and maintenance.				
l. Laboratory	Self-explanatory				
m. Insurance	Amounts paid/estimated for vehicle, liability, workers' compensation and other insurance.				
n. Regulatory Commission Expenses	Amounts paid/estimated for rate cases and other activities with a regulatory commission				
o. Advertising	Amounts paid/estimated for informational, instructional and other advertising.				
p. Miscellaneous	Amounts paid/estimated for all expenses not included elsewhere (e.g. permit fees, training, etc.).				
q. Total Cash O&M Expenses (5a thru 5p)	Total of lines 5a thru 5p.				
r. Replacement Expenditures	Amounts paid/estimated for replacement of equipment to maintain system integrity.				
s. Total OM&R Expenditures (5q+r)					
t. Loan Principal/Capital Lease Payments	Include cash payments made/estimated for principal on all loans, including vehicle and equipment purchases on time payments and capital lease payments.				
u. Loan Interest Payments	Self-explanatory				
v. Transfers Out	Include cash transfers made/estimated to funds or entities outside the PWS.				
w. Capital Purchases (specify):	Amount of cash outlays/estimates for items such as equipment, building, vehicle purchases, and leasehold improvements that were not a part of the initial design of the PWS infrastructure.				
6. Total Cash Paid Out (5s thru 5x)	Self-explanatory				
7. Ending Cash Position (4 - 6)	Self-explanatory				
8. Number of Customer Accounts	Use most recent system data or expected increases.				
9. Ave User Charge per Customer (2d/8)	Self-explanatory				
10. Coverage Ratio (2h-5s)/(5t+5u)	Measure of the sufficiency of net operating profit to cover the debt service requirements of the system. A bond covenant might require this to meet or exceed certain limits (e.g. 1.25)				
11. Operating Ratio (2d/5s)	Measure of whether operating revenues are sufficient to cover OM&R expenses. An operating ratio of 1.0 is the bare Minimum for a self-supporting facility. With debt service requirements, the operating ratio would have to be higher.				
12. End of Year Operating Cash (7 - 13)	All non-reserved cash.				
13. End of Year Reserves:	Do not include depreciation as a reserve unless there is actually a "depreciation" reserve that has cash set-aside for future expansion.				
a. Debt Service Reserve	Funds specifically set-aside to meet debt service requirements or requirements set forth in a loan covenant/bond indenture.				
b. Bond Retirement Reserve	Funds specifically set aside to retire debt as it is scheduled.				
c. Capital Improvement Reserve	Funds specifically set aside to meet long-term objectives for major facility expansion, improvement and/or the construction of a new facility.				
d. Replacement Reserve	Funds specifically set aside for the future replacement of equipment needed to maintain the integrity of the facility over its useful life.				

Putting it all Together:

Do you have Technical, Managerial, and Financial Capacity?

After processing through all of the questions in this self-assessment manual, you should be in a position to summarize what you have learned about your status.

- First, you should have accumulated a list of items on which you need to do some more research or investigation in order to fully answer the question, or in order to reverse your answer from “no” to “yes.”
- Second, you should be able to make a qualitative summary of what you have learned by taking a clean sheet of paper and filling in the most important things that come to mind – reflecting on the issues raised in this manual – under the following headings
 - Strengths
 - Weaknesses
 - Opportunities
 - Threats
- Third, perhaps with some additional research – or with the right assistance – you may be within range of being able to begin a more quantitative form of business planning utilizing budget and revenue planning.

Finally, customer awareness of the issues covered by the preceding questions in this manual is the true foundation of viability. Getting customers to fully appreciate what it takes to operate and maintain a water system is important to assure support for new capital investment and higher water rates. The more customers know about the cost to run a proper water system in the future, the more open-minded they are likely to be in considering alternative strategies for providing water service, conceivably at lower cost. Nothing focuses the mind like cost estimates. Once you have performed an analysis of prospective future liabilities and costs following the questions in this manual, you will have the information needed to get people to focus on the choices involved in determining your future.

The final question to ask yourself is: ***How much of all this is known and understood by the customers; and how would this change their attitudes about the future?***

If you need more information or assistance in completing this manual, please contact:

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